PROJECT DATA

Procedyne Corporation - 00GO10517

Development of an Innovative Efficient High Temperature Natural Gas Fired Furnace

Recipient:	Procedyne Corporation	Instrument Number:	DE-FG36-00GO10517
Recipient Project Director:	Dr. Mark Stevens 732.249.8347 11 Industrial Drive New Brunswick, NJ 08901	CPS Number:	1377
		HQ Program Manager:	Lisa Barnett 202.586.2212
		GO Project Officer:	Keith Bennett 303.275.4905
Recipient Type:	For Profit Organization	GO Contract Specialist:	Melissa Wise 303.275.4907
Subcontractor(s):		B & R Number(s):	ED1906020
		PES Number(s):	00-2045
EERE Program:	Industrial Technologies	State Congressional District:	NJ - 1

PROJECT SCOPE: The major focus of this project is to design, construct and test a natural gas fired prototype furnace to evaluate the design concept, construction materials, construction methods, and heat transfer characteristics. Compared to current gas-fired heating mantles, the proposed prototype furnace is expected to save as much as 70% of natural gas fuel and achieve a higher combustion efficiency.

FINANCIAL ASSISTANCE

Approved DOE Budget	$286,722	Approved DOE Share	$199,361
Obligated DOE Funds	$199,361	Cost Share	$51,481
Remaining Obligation	$0		
Unpaid Balance	$1,269	**TOTAL PROJECT**	**$320,203**

Project Period: 6/1/00-5/31/04

TECHNICAL PERFORMANCE

DE-FG36-00GO10517

Procedyne Corporation

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PROJECT SYNOPSIS

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SUMMARY OF TECHNICAL PROGRESS

This is a FY2000 award and work commenced on 12/01/00.

FY2000 activities are summarized. Based on the technical progress made to date, a bench-scale unit was not required. Due to this fact, more time was allowed to complete the design and fabrication of the prototype furnace. Gathering the performance data on the prototype unit was technically more beneficial than the bench-scale unit.

FY2001 activities are summarized. All the material required to fabricate the prototype unit has been acquired. Shell assembly and retort fabrication was completed.

FY2002 activities are summarized. Dr. Staffin of Procedyne submitted a technical paper entitled "Radiant Porous Wall" to Gas Technology Institute for the 1st Annual Conference & Exhibition on Natural Gas Technologies. The Principal Investigator, Mr. Vijay Shroff, left Procedyne and Dr. Mark Stevens took over as Principal Investigator.

FY2003. No progress reported.

FY2004. Procedyne was contacted about submitting a final report, and did not respond to the DOE request.

SUMMARY OF PLANNED WORK

Porcedyne will continue assembly and completion of the prototype. To monitor and field test the unit, it was decided to install the prototype furnace initially at Procedyne and not at an outside heat treatment facility.

An email message was sent, 06/16/04, to Dr. Stevens requesting a project update. Procedyne has not responded to the DOE request.

PROJECT ANALYSIS

Technical and commercial success potential cannot be determined with available information.

ACTION REQUIRED BY DOE HEADQUARTERS

No action is required from DOE Headquarters at this time.

STATEMENT OF WORK

DE-FG36-00GO10517

Procedyne Corporation

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Detailed Task Description

Task 1. Bench-Scale Testing

Additional Bench-Scale Experiments will be conducted at Stevens Institute of Technology. This bench-scale laboratory prototype furnace will be operated to specifically target mechanical feasibility of the porous wall principle and to evaluate additional ceramic materials as possible candidates for the advanced GHFM.

The overall objective of the proposed work is to obtain information to design and construct a pilot prototype furnace for field-testing. Specifically, the proposed work will be:

- Evaluate and select a suitable porous material which includes establishment of joining and sealing techniques to meet the performance requirements of the PWRB heating mantle,
- Design and construct an inconel retort that will be a sand fluid bed to simulate a heat-treating furnace which replaces the air double-pipe used earlier, and
- Test and evaluate construction materials and techniques for the furnace.

Task 2. Commercial Prototype

The objective is to design, construct, and test a prototype furnace to evaluate construction materials, construction methods, and heat transfer characteristics. This is the major focus of the proposed program.

It will be necessary to establish a commercial relationship with a field test partner agreeable to the concept of working with a commercial prototype furnace for approximately 500-1000 hours of operation in a suitable application. The right for the test partner to purchase the system at a favorable price, if the system proves to offer operation advantages over conventional technology, will also be necessary.

The activities of the commercial prototype phase of the program are summarized as follows:

- Engineer a Commercial Prototype system, based on the performance of the Laboratory Prototype furnace, for the application of the cooperating field test partner;
- Fabricate and test the Commercial Prototype system, then ship to the field test partner;
- Assist the field test partner in the installation of the Commercial Prototype system and in the commissioning and startup of the system;
- Monitor the performance results of the Commercial Prototype system for 2000-4000 hours of operation;
- Modify the Commercial Prototype system, as required to achieve successful program results, and modify engineering design of subsequent units;
- Prepare a complete report on the program to this point.

Task 3. Product Specification

Based on the results of the Field Test Prototype phase of the program, engineering standards and drawings of the commercial offerings of the porous wall technology would be prepared to support the forthcoming marketing program to achieve successful commercialization.

Task 4. Marketing & Business Planning

Assuming the program is successfully accomplished through the Field Test Prototype phase of the program, Procedyne Corp. would be interested in initiating the marketing of the porous wall technology in its commercial product areas.

The following commercial product areas involve potential applications of the porous wall burner technology and are active commercial offerings of Procedyne:

- Fluid Bed Heat Treating Furnaces,
- Fluid Bed Cleaning Furnaces,
- Fluid Bed Inorganic Chemical Reactors, and
- Process Gas Preheaters.

Procedyne would seek participation in the marketing program from the Gas Technology Commercialization Center of the American Gas Association, Arlington, Virginia.

Marketing Program

The initial marketing program is summarized as follows:

(1) Technical presentations of the technology would be made at various society meetings and trade shows.
(2) Technical papers would be written and published in suitable journals.
(3) Technical brochures and specification sheets would be developed to support advertising and direct mail efforts.
(4) Procedyne sales organization worldwide would be trained in the new technology and product offerings as well as instructed to follow-up all sales leads.

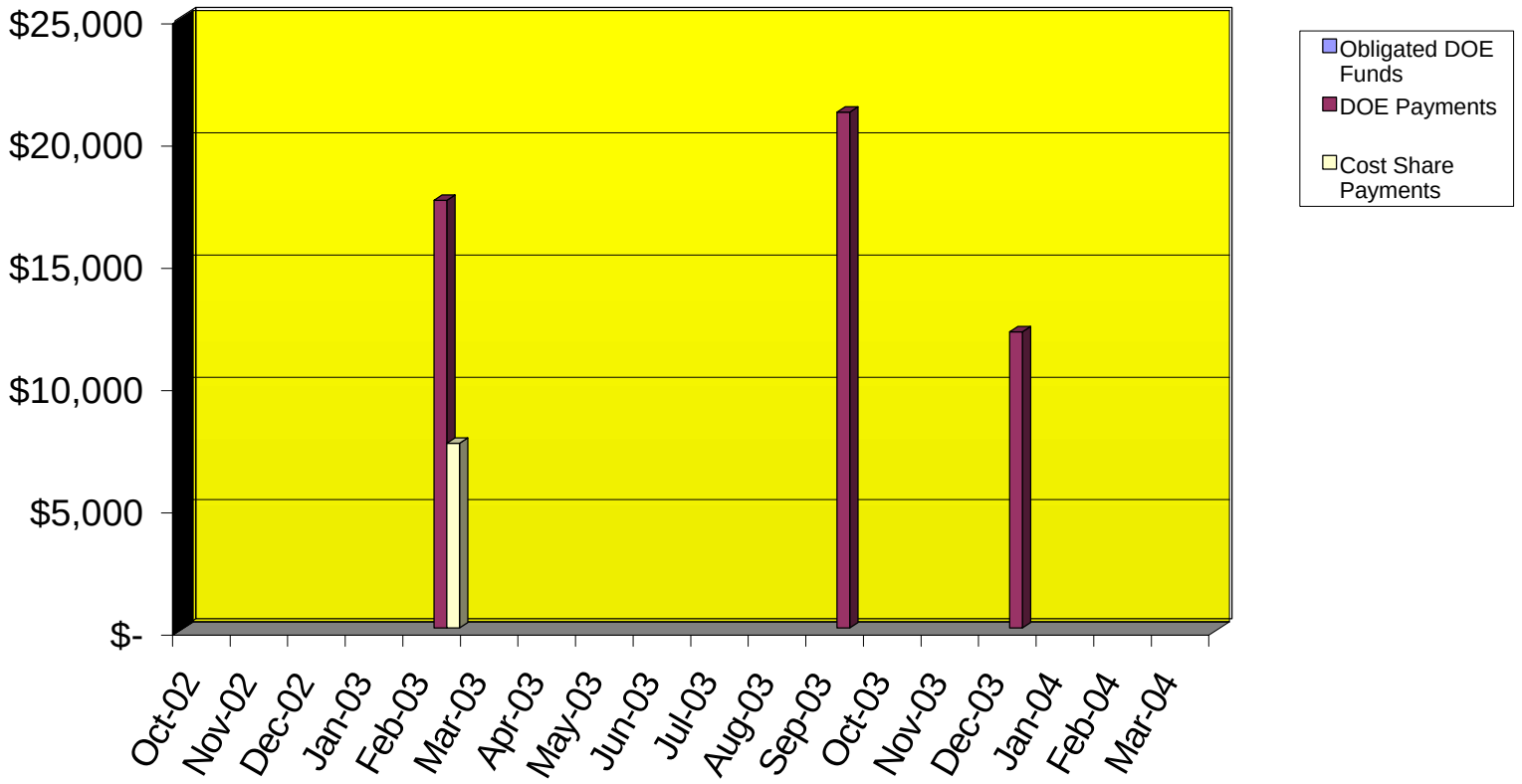
Task 5. Project Management and Final Report

A final report will be prepared and sent to the DOE Golden Field Office. The final report will discuss the progress of the project (compared to the original schedule), the results achieved, and lessons learned.

Project Cost Performance in DOE Dollars for Fiscal Year 2003

DE-FG36-00GO10517 **Procedyne Corp**

Development of an Innovative Energy Efficient High Temp Furnace



	Oct-02	Nov-02	Dec-02	Jan-03	Feb-03	Mar-03	Apr-03	May-03	Jun-03	Jul-03	Aug-03	Sep-03
Obligated DOE Funds	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
DOE Payment	$0	$0	$0	$0	$17,500	$0	$0	$0	$0	$0	$0	$21,100
Cost Share Payment	$0	$0	$0	$0	$7,555	$0	$0	$0	$0	$0	$0	$0

	Oct-03	Nov-03	Dec-03	Jan-04	Feb-04	Mar-04	PFY*	Cumulative
Obligated DOE Funds	$0	$0	$0	$0	$0	$0	$199,361	$199,361
DOE Payment	$0	$0	$12,120	$0	$0	$0	$147,372	$198,092
Cost Share Payment	$0	$0	$0	$0	$0	$0	$816	$8,371

Approved DOE Budget:	$268,722
Approved Cost Share Budget:	$51,481
Total Project Budget:	$320,203

* Prior Fiscal Years

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